
Network Ring Again

Network Ring Again (NRAG) provides Ring Again capability within the PRI/ISL network. NRAG allows a caller at location A, encountering a busy destination at location B anywhere in the ISDN PRI network, to press the Ring Again key and be notified when the busy station becomes idle.

NRAG operates in “free notification” mode. This means the terminating switch determines when the called party becomes idle and notifies the originating switch.

For Meridian digital sets, the caller’s phone emits a buzz from the speaker and the Ring Again lamp flashes. To call the station, the caller presses a DN key and then the Ring Again key on the phone—the call is made automatically.

For analog (500/2500 type) sets, the caller’s phone provides short bursts of ringing as a station-idle notification. To call the station, the caller lifts the phone’s receiver during the ringing period—the call is made automatically.

When more than one caller activates NRAG on a terminating station, the calls are queued on a first-come, first-served basis. When the called station becomes idle, only the first caller in the queue is signaled. The second caller in the queue is signaled only after the Queue Advance Timer (4 seconds) expires.

Once NRAG has been activated, the Called Party status is monitored until one of the following events occurs:

- The line is idle and a new call setup can be tried.
- The call is deactivated when a customer-defined timer expires.
- The call is manually deactivated by the caller.

NRAG requires a number of timers to control the feature functions on both the originating and terminating switches. Tables 82 and 83 show the values defined and which timers are used by the Meridian 1.

Table 82
Originating Switch Timers

Timer code	Description	Duration
T2	Period for unanswered recall notify	30 seconds
T5	Message Response Timer	4 seconds
T6	Duration Timer	30 minutes
TR2	Recall Suspend Option Timer	9 minutes
Note: TR2 not applicable to Meridian 1.		

Table 83
Terminating Switch Timers

Timer code	Description	Duration
T7	Duration Timer	30 minutes
GT	Guard Timer	6 seconds
QAT	Queue Advance Timer	4 seconds
Note: GT is not applicable to Meridian 1.		

X11 release 14

With X11 release 14, NRAG capability is extended to 500/2500 telephone types. (With X11 release 13, NRAG functions for Meridian 1 electronic and digital telephones only.)

X11 release 15 and later

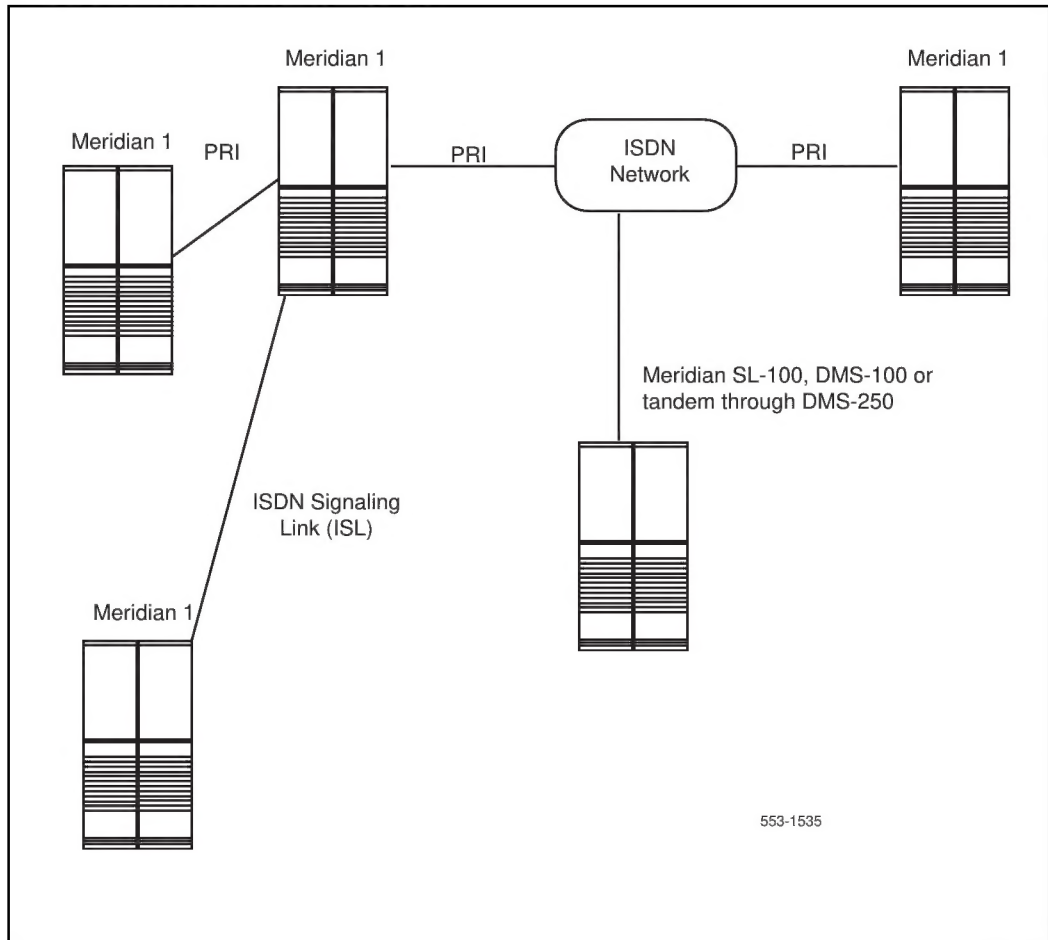
NRAG is compatible with the following systems:

- Meridian 1
- SL-100
- DMS-100
- DMS-250 supported as a tandem switch only

Note: SL-100, DMS-100, and DMS-250 support private numbering plans only.

Refer to Figure 78 for an NRAG configuration.

Figure 78
Network Ring Again configuration



Operating parameters

The following list describes the NRAG operating parameters:

- The interfaces must be Meridian 1 or DMS. NRAG is not supported for AT&T connections.
- The call must be PRI end to end.
- The calling and called party number provided for the PRI call must be within the same dialing plan.
- NRAG is supported with the Uniform Dialing Plan (UDP), typically with 3-digit location codes and 4-digit Directory Numbers.
- NRAG is supported in Coordinated Dialing Plan (CDP) networks with up to 4-digit directory numbers if the Distant Steering Codes do not exceed 2 digits. X11 release 14 and earlier support only up to 6-digit CDP. X11 release 15 and later support up to 10-digit CDP.
- The appropriate package, such as NARS, BARS CDP, or ISDN, must be equipped.
- NRAG supports Private/TIE trunks but not Public call types.
- The Calling Line Identification (CLID) for ACD sets is the ACD DN instead of the ACD POS ID.
- NRAG is not compatible with an Add-On Data Module (ADM) trunk route.
- NRAG does not support tandem TIE trunk networks using Direct Trunk Access Codes or Trunk Steering Codes.
- NRAG is not supported for calls using a Trunk Access Code.
- NRAG, like Ring Again, is not supported on modem routes.
- NRAG cannot be invoked for a redirected call, a blocked call, or a modified call (for example, conference, transfer, or attendant calls).

The following features are not supported by NRAG:

- Call Redirection
- Trunk Group Busy Indication
- Flexible and Coordinated Call Back Queuing
- Network Facilities Blockage (Main CBQ)
- ACD Queue calls
- Attendant Console calls
- Maintenance Busy Mode
- Direct Inward System Access
- Directed Call Pickup

Feature interactions

- Make Set Busy
NRAG can be originated by a station in the Make Set Busy (MSB) mode. It can also be activated against a station in the MSB mode, assuming no Call Forward All Calls DN.
- Do Not Disturb
Ring Again originating from a station with Do Not Disturb (DND) active is supported; however, NRAG cannot be activated against a terminating station that has DND activated.
- Call Waiting/Camp-On
If Call Waiting or Camp-On is active on the terminating station, no notification will be sent to the originating party until the terminating station becomes idle.
- Call Forward All Calls
If the originating station activates Call Forward All Calls (CFAC) after activating NRAG, NRAG can still be received.
- Data calls
NRAG is supported for data calls.
- Calling Line Identification
NRAG is supported only if the Calling Line Identification (CLID) uses the prime DN.

- Incoming Digit Conversion
If there is any conversion done to the called DN, NRAG is not supported.
- CDP and NARS
For networks with CDP and NARS using the same route, turn off INAC and insert a DMI when needed.

Feature packaging

The option number for NRAG is 148 (NTWK). Table 84 shows the packages required for this feature. See *X11 features and services* (553-3001-305) for X11 release software packages and their dependencies.

Table 84
Package requirements for Network Ring Again

Package	Name of package	Mnemonic
75	PBX Interface for DTI/CPI	PBXI
145	ISDN Signaling	ISDN
146	ISDN Primary Rate Interface	PRI
OR	<i>Dependencies:</i> 75, 145, 19 [CLID]	
147	ISDN Signaling Link <i>Dependencies:</i> 145	ISL
Note 1: Package 75 is not required for ISL (package 147), unless ISL is over DTI.		
Note 2: NRAG requires ISDN option package 145 with 146 or 147.		

Feature implementation

X11 release 14 added a new prompt, PNI, to LD 15 to enter the Private Network Identifier value per customer. X11 release 14 also added the PNI prompt to LD 16 along with a second new prompt to enter the NRAG service timer per route. For a description of the prompts and responses for Meridian 1 software, see the *X11 input/output guide* (553-3001-400).

The duration timer for Network Ring Again (NRAG) controls the amount of time between placing the call on Ring Again and timeout.

Note: In X11 release 15 and later, Network Ring Again (NRAG) requires ESN access code insertion. The configuration of ESN access code insertion is provided in “Check Numbering Plan enhancement interaction” on page 651.

Configuration

All NRAG database configuration must be checked point to point, regardless of whether NRAG is activated point to point or it tandems through an intermediate node. Within one network, use the same value for customer private identifier (PNI) in both the Customer Data Block (LD 15) and the Route Data Block (LD 16) in all systems.

Note: PNI must be greater than zero for NRAG to be functional.

Check Numbering Plan enhancement interaction

If a Meridian 1 switch is running X11 release 15 or later and is interfacing with an X11 release 15 or later, then the originating switch must not use the digit manipulation (DMI) to insert the ESN access code. The ESN access code must be inserted at the terminating node. See the example in Table 85.

Table 85
Inserting the ESN access code

Originating Switch	Terminating Switch
X11 release 15 and later	X11 release 15 and later
LD 86: DMI = 0	LD 16: INAC = YES

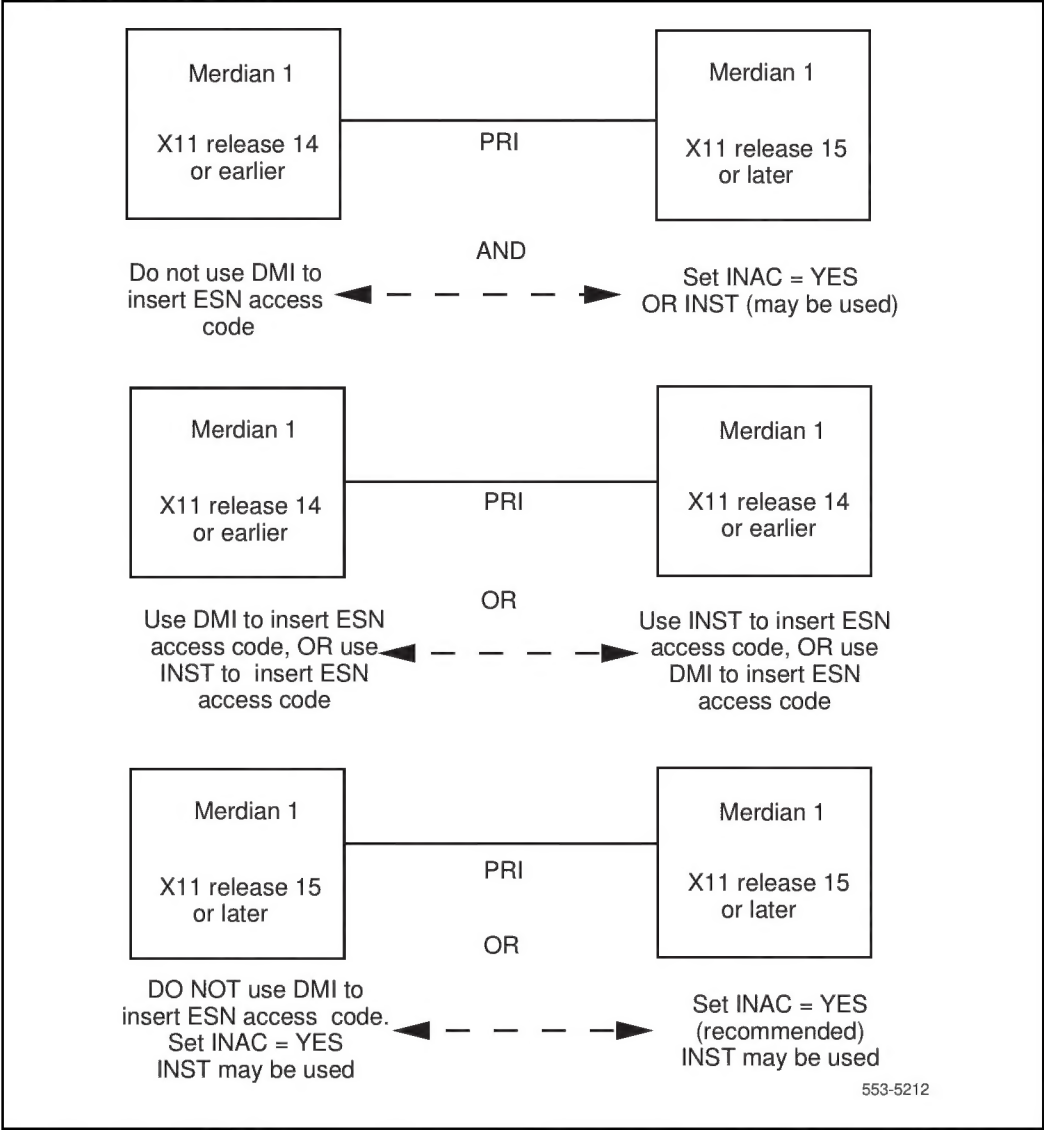
By default, making INAC = YES always inserts AC1. However, if your switch is receiving Public call types such as NXX or NPA over the same PRI route as the terminating switch, and you need to insert AC2, you must specify these call types under the AC2 prompt in the Customer Data Block. For example, LD 15: AC2 = NXX NPA.

Note 1: For X11 release 14 and earlier, use INST in LD 16. For X11 release 15 and later, use INAC.

Note 2: The terminating PBX must Insert Net Access Code (INAC).

See Figure 79 for a summary of these rules.

Figure 79
Database conversion



Release identification

For Meridian 1 software from X11 release 15 and later, the configuration record in LD 17 must contain the Release ID of the corresponding switch. For DMS interfaces, it must contain the correct BCS load. For example, in LD 17:

RLS_ID = 15 (Meridian 1 interface)

RLS_ID = 28 (DMS interface)

Refer to *X11 input/output guide* (553-3001-400) for minimum compatible releases.

NARS calls

If NRAG is to be activated on a NARS call, verify that the Home Location Code is defined in the Customer Data Block in LD 15. For example, in LD 15:

HLOC = 646

Coordinated Dialing Plan call

Follow these steps for a Coordinated Dialing Plan (CDP) call:

- 1** Check LD 87 for all local steering codes and distant steering codes.
- 2** Check the ESN Data Block for the following prompts:

LD 86: CDP = YES/NO

MXSC = Maximum number of Steering Codes

NCDP = Number of digits in CDP DN

Implementation procedures

Follow these steps to configure Network Ring Again:

1 LD 17 Configuration Record (Procedure 48)

Set the software release ID of the far end.

X11 release 17 and earlier

OR

1 LD 17 Configuration Record (Procedure 49)

Set the software release ID of the far end.

X11 release 18 and later

2 LD 15 Customer Data Block (Procedure 50)

Set up Private Network Identifier (PNI) mapping between call type translator HLOC, LSC, HNPA, or HNXX for proper CLID construction.

3 LD 16 Route Data Block (Procedure 51)

Set up duration timer (NRAG), Private Network Identifier (PNI), insertion of ESN access codes (INAC).

Procedure 48**Use LD 17 to define the software release ID (X11 release 17 and earlier)**

Prompt	Response	Description
REQ	CHG	
TYPE	CFN	Configuration Data Block
ISDN	YES	
DCHI	1-15	D-channel number
.		
.		
RLS	xx	This is the current software release of the far end. If the far end has an incompatible release of software, it prevents the sending of application messages. The minimum X11 release is 14; the minimum BCS release is 28.

Procedure 49**Use LD 17 to define the software release ID (X11 release 18 and later)**

Prompt	Response	Description
REQ	CHG	Change
TYPE	CFN	Configuration Record
ADAN	NEW DCH 0–63	Add a primary D-channel (can also CHG and OUT DCH)
CTYP	DCHI, MSDL	Card type
DNUM	0–15	Device number: physical port (odd) for D-channel on DCH, physical card address for MSDL
_PORT	0–3	Port number on MSDL card
RLS	xx	Release ID of the switch at the far end of the D-channel

Procedure 50**Respond to the following prompts in LD 15**

Prompt	Response	Description
REQ	NEW CHG	Add or change data
TYPE	CDB NET_DATA	Customer Data Block Networking Data (Release 21 gate opener)
CUST	0-99	Customer Number
- OPT	RNA	Allow Ring Again on No Answer
- AC2	aaa	Access code 2. Enter call types (type of number) that use access code 2. Multiple call types can be entered. Default is to access code 1.
- ISDN	YES	Change ISDN options
- PNI	1-32700	Customer private identifier—unique to a customer. Within one network, use the same value for PNI in both the Customer Data Block (LD 15) and the Route Data Block (LD 16) in all PBXs.
- HNPA	100-999	Area code for the Meridian 1 system
- HNXX	100-999	Prefix for the central office
- HLOC	100-999	Home location code (NARS)
- LSC	1-9999	1- to 4-digit Local Steering Code established in the Coordinated Dialing Plan (CDP). The LSC prompt only appears if user has a 5- or 6-digit dialing plan.

Procedure 51**Respond to the following prompts in LD 16**

Prompt	Response	Description
REQ	NEW,CHG,OUT	
TYPE	RDB	Route Data Block
CNTL	(NO),YES	Changes to controls or timers
TIMR		
	NRAG (30)–240	Network Ring Again duration timer (T6 and T7 timers)—time is in minutes. Currently, only a value of 30 minutes is supported.
		Note: Package 148, Advanced ISDN Features, is required.
...		
INAC	(NO), YES	Insert access code. Permit an ESN access code to be automatically added to an incoming ESN call from a private network. If INAC is YES, the digit insertion option (INST) is bypassed. This prompt only appears if the route type is a TIE trunk.
PNI	1–32700	Customer private identifier—unique to a customer. Within one network, use the same value for PNI in both the Customer Data Block (LD 15) and the Route Data Block (LD 16) in all PBXs.

Feature testing

To verify NRAG, perform the following steps:

- 1 Coordinate with far end personnel. Place a call to a busy station at the far end over a PRI trunk.
- 2 Verify that the calling terminal can activate NRAG and that any Ring Again indicator lamps are lit.
- 3 When the far end call disconnects, verify that the calling terminal is notified.
- 4 Verify indication that the far end has disconnected.
- 5 Initiate NRAG capabilities.
- 6 Calling party answers.
- 7 Disconnect.

Note: Verify this procedure against different terminal types.